



HOPE-PV 2019

1st International School on Hybrid,
Organic and Perovskite
Photovoltaics

SCHOOL PROGRAM

October 21-23, 2019

Moscow, Russia

Organizer

Institute for Problems of Chemical Physics of Russian Academy of Sciences

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Program

Monday, October 21, 2019

09:00	Arrival at Skoltech, registration, morning coffee
09:40	Welcome Address by Prof. Sergey M. Aldoshin, Academician of Russian Academy of Sciences Welcome Address by HOPE-PV 2019 School Chairs and Skoltech President
<i>Session 1: Hybrid and perovskite PV</i> <i>Chair: Keith Stevenson</i>	
10:00	Plenary lecture: Compositional Engineering of Halide Perovskites for High Performance and Durable Photovoltaic Devices Tsutomu Miyasaka
11:00	Tutorial lecture: Dye Sensitized and Perovskite Photovoltaics: from cells to modules Aldo Di Carlo
12:00	Lunch break
<i>Session 2: Emerging materials for perovskite photovoltaics</i> <i>Chair: Aditya Sadhanala</i>	
13:00	Invited talk: Iodobismuthates, Polyiodides, and Polyiodobismuthates: Any prospects for Modern Lead-free Photovoltaics? Andrei Shevelkov
13:45	Invited talk: Periodic Table Elements' Chemical Platform for Advanced Functional Materials with Perovskite Structures Eugene Gudilin
14:30	Coffee break/Poster session

Session 3: Perovskite solar cells and light emitting diodes
Chair: Jovana V. Milic

16:15	Inverted perovskite solar cells with inorganic hole transport layer for indoor application Danila Saranin
16:30	Influence of hole transport materials on the electrochemical stability of perovskite solar cells Olga R. Yamilova
16:45	One-step printable hole transporting and absorbing layers fabricated by slot-die coater in ambient conditions for perovskite solar cells Thai Son Le
17:00	Interface-induced degradation effects in perovskite solar cells Aleksandra G. Boldyreva
17:15	Precursor solution chemistry-controlled photostability of mixed-cation perovskite solar cells based on zinc oxide ETL Sergey Tsarev
17:30	Light Emitting Solar Cells Enabled by Ion Migration in Mixed Cation vs Mixed Halide Perovskites Dmitry S. Gets
17:45	Ambipolar perovskite light emitting diodes Arthur Ishteev
18:00	<i>Joint photo</i>
18:30	Transfer to Technopark, Osteria Mario restaurant
19:00	Welcome dinner
21:00	Transfer to Moscow

Tuesday, October 22, 2019

09:30 Arrival at Skoltech, morning coffee

Session 4: **Charge carriers and defects in perovskite solar cells**

Chair: Ajay K. Jena

10:00 Tutorial lecture:
Science via Mirage and Investigation of Passive and Dynamic Defects in Perovskites
Aditya Sadhanala

11:00 Tutorial lecture:
Hot Carrier Extraction in Halide Perovskites
Maxim Pshenichnikov

12:00 Lunch break

Session 5: **Perovskite stability and interfacial engineering**

Chair: Eugene Katz

13:00 Tutorial lecture:
Unravelling Intrinsic Bulk and Interfacial Degradation Mechanisms in Lead Halide Perovskite Solar Cells
Pavel Troshin

14:00 Invited talk:
Supramolecular Engineering for Hybrid Perovskite Photovoltaics and Beyond
Jovana V. Milic

14:45 Invited talk:
The Interfaces Might Play a Critical Role in Improving Performance and Stability of Organic-inorganic and All-inorganic Perovskite Solar Cells
Ajay K. Jena

15:30 Invited talk:
Bi-dimensional materials for new-generation photovoltaics
Antonio Agresti

16:15 Coffee break/poster session

17:00 Skoltech Energy Colloquium by Prof. Eugene Katz "**Ultra-efficient photovoltaics: solar concentration vs. external photon recycling**" (room E-B4-3007)

Parallel Excursion at Skoltech Campus and Labs

Wednesday, October 23, 2019

09:30 | Arrival at Skoltech, morning coffee

*Session 6: **Solar cell characterization***

Chair: Maxim Pshenichnikov

10:00 | Tutorial lecture:
How to assess operational stability of perovskite solar cells?
Eugene Katz

11:00 | Tutorial lecture:
Accurate evaluation of the solar cell efficiency
Dmitry Parashchuk

12:00 | Lunch break

*Session 7: **Advanced microscopy in photovoltaics***

Chair: Andriy Zhugayevych

13:00 | Tutorial lecture:
Spatially-resolved Measurements of Semiconductor Interfaces
Keith Stevenson

14:00 | Invited talk:
Ex-situ and in-situ evaluation of perovskite solar cell degradation using atomic force microscopy
Sergey Luchkin

14:45 | Coffee break/poster session

*Session 8: **Organic photovoltaics***

Chair: Pavel Troshin

15:45 | Tutorial lecture:
Conjugated donor-acceptor oligomers for organic and hybrid photovoltaics
Sergey Ponomarenko

16:45 | Invited talk
Computational studies of organic semiconductors
Andriy Zhugayevych

17:30 | **Exciton to charge conversion in pristine non-fullerene acceptors: a computational study**
Anastasia Markina

17:45	Novel Donor Small Molecules based on Benzodithiophene and Benzotriindole Cores for Organic Photovoltaics Dmitry Balakirev
18:00	Charge generation and recombination mechanisms in single component organic solar cells based on conjugated star-shaped oligomers Artur Mannanov
18:15	Round Table Discussion “Commercialization potential of perovskite and organic photovoltaics”
19:00	Announcement of awards for the best poster and oral talks Closing remarks from HOPE-PV 2019 School Chairs

Posters

P1	Revealing the impact of small molecular hole-transport materials on the performance of perovskite solar cells Ekaterina Agafonova
P2	Intrinsic stability challenges in design of absorber materials for lead halide perovskite solar cells Azat F. Akbulatov
P3	CVD process for metal halide perovskite solar cells Lev Luchnikov
P4	Phenyl-C₆₁-butyric acid as an interface passivation layer for highly efficient and stable perovskite solar cells Tatiana Dubinina
P5	Top or Bottom: Decoupling the Contributions of Hole- and Electron-Transport Layers to Light-Induced Degradation of p-i-n Perovskite Solar Cells Mohamed Elnaggar
P6	Pyrrolo[3,4-c]pyrrole-1,4-dione-based ultra-narrow bandgap conjugated polymers: promising electron-transport materials for perovskite solar cells Alexandra M. Gordeeva
P7	MAPbBr₃ single crystal for use in photodetector structures Dmitrii Kafanov
P8	Conjugated polymers: promising hole-transport materials for dopant-free perovskite solar cells Marina Tepliakova
P9	Inverted perovskite solar cell with SnO₂ interlayer Tatiana Komaricheva
P10	Impact of overstoichiometric PbI₂ on photovoltaic performance and photostability of MAPbI₃ perovskite films Mayuribala Mangrulkar
P11	On the way to develop scalable techniques for deposition of multication perovskite films and solar cells Ruslan Timerbulatov

P12	Influence of partial Pb²⁺ substitution in APbI₃ perovskites on their photovoltaic performance and photostability Marina I. Ustinova
P13	Synthesis and properties of novel conjugated donor-acceptor oligothiophenes with electron-withdrawing methyldicyanovinyl groups for organic photovoltaics Nadezhda Kalinichenko
P14	Development of the all-inorganic perovskite-like chalcogenide metal complexes of Cd, In, Sb and Bi and investigation of their semiconductor and photovoltaic characteristics Igor Gorokh
P15	Tellurium complex polyhalides: narrow bandgap photoactive materials for electronics Artyom V. Novikov
P16	Synthesis of novel conjugated polymers based on benzodithiophene and their application in polymer solar cells Andrey S. Kozlov
P17	Design of additives to suppress degradation of photoactive materials in organic solar cells Ilja V. Martynov
P18	Scalable organic solar cells based on novel (X-DADAD) polymers processed using layer-by-layer technique Sergey Nikitenko
P19	Novel Conjugated Polymers Based On Thiazolothiazole For Organic and Perovskite Solar Cells Alexander V. Akkuratov
P20	Design of low molecular weight electron donor molecules based on thiophene and benzothiadiazole for solar cell applications Alexander V. Akkuratov
P21	Synthesis of novel donor-acceptor conjugated polymers comprising thiazolothiazole units for photovoltaic applications Pavel Proshin

P22	Novel dioxyphenylene-TBTBT copolymer for application in solar cells Daria Revina
P23	Self-powered organic IR photodetectors based on low bandgap polymer/fullerene composites Elena Romadina
P24	Electron-selective transparent electrodes and buffer layer materials for efficient standard and inverted organic solar cells Diana K. Sagdullina
P25	Novel low molecular weight semiconductor materials comprising alternating benzothiadiazole and thiophene units Ilya E. Kuznetsov
P26	Novel benzodithiophene-based low bandgap polymers for organic solar cells and modules Petr M. Kuznetsov
P27	Synthesis of novel (X-DADAD)_n conjugated polymer based on thiophene and benzothiadiazole and its application in organic and perovskite solar cells Alina V. Lolaeva
P28	Fabrication of multi-cation planar PSC via sequential deposition in ambient conditions Inga Ermanova
P29	All-inorganic CsPbI₃ perovskite solar cells with long-term stability enabled by functional additives Lyubov Frolova
P30	DFT studies of nonstoichiometric hybrid perovskites Lavrenty Gutsev
P31	New conjugated block co-polymers as hole-transport layer materials for efficient perovskite solar cells Alexandra Mikheeva
P32	Impact of photoactive layer/electrode interface on organic solar cells degradation Fedor Prudnov